

SEQUENCE LISTING

<110> Novartis Forschungsstiftung, Zweigniederlassung Friedrich
Miescher Institute for Biomedical Research

5

<120> Method for Detecting Teneurin Signalling and Method of Screening
for Agents Involved in Teneurin Signalling

<130> 1-32724A/FMI

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<160> 9

<170> PatentIn version 3.1

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<210> 1

<211> 963

<212> DNA

<213> homo sapiens

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cat gaa atg gat cta gct tac acc agt tct tct gat gag agt gaa gat 96
His Glu Met Asp Leu Ala Tyr Thr Ser Ser Ser Asp Glu Ser Glu Asp
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gga aga aaa cca aga cag tca tac aac tcc agg gag acc ctg cac gag 144
Gly Arg Lys Pro Arg Gln Ser Tyr Asn Ser Arg Glu Thr Leu His Glu
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tat aac cag gag ctg agg atg aat tac aat agc cag agt aga aag agg 192
Tyr Asn Gln Glu Leu Arg Met Asn Tyr Asn Ser Gln Ser Arg Lys Arg
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aaa gaa gta gaa aaa tct act caa gag atg gaa ttc tgt gaa acc tct 240
Lys Glu Val Glu Lys Ser Thr Gln Glu Met Glu Phe Cys Glu Thr Ser
65 70 75 80

cac act ctg tgc tct ggc tac caa aca gac atg cac agc gtt tct cgg 288

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	Gly	Ala	Ala	Ser	Pro	Asp	His	Ala	Leu	Arg	Met	Trp	Ile	Arg	Gly	Met	
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	Lys	Ser	Glu	His	Ser	Ser	Cys	Leu	Ser	Ser	Arg	Ala	Asn	Ser	Ala	Leu	
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	Val	Gln	Ser	Ser	Pro	His	Asn	Gln	Phe	Thr	Phe	Arg	Pro	Leu	Pro	Pro	
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30	cca	cct	ccg	cct	cct	cat	gcc	tgc	acc	tgt	gcc	agg	aag	cca	ccc	cct	576
	Pro	Pro	Pro	Pro	Pro	His	Ala	Cys	Thr	Cys	Ala	Arg	Lys	Pro	Pro	Pro	
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	Ala	Ala	Asp	Ser	Leu	Gln	Arg	Arg	Ser	Met	Thr	Thr	Arg	Ser	Gln	Pro	
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40	agc	cca	gct	gct	cca	gct	ccc	cca	acc	agc	acg	cag	gat	tca	gtc	cat	672
	Ser	Pro	Ala	Ala	Pro	Ala	Pro	Pro	Thr	Ser	Thr	Gln	Asp	Ser	Val	His	
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	His	Phe	Leu	Phe	Lys	His	Gly	Ser	Gly	Ser	Ser	Ala	Ile	Phe	Ser	Ala	
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	Ala	Ser	Gln	Asn	Tyr	Pro	Leu	Thr	Ser	Asn	Thr	Val	Tyr	Ser	Pro	Pro	
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ccc agg cct ctt cct cga agc acc ttt tcc cga cct gcc ttt acc ttt 864
 Pro Arg Pro Leu Pro Arg Ser Thr Phe Ser Arg Pro Ala Phe Thr Phe
 275 280 285

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aac aaa cct tac agg tgc tgc aac tgg aag tgc aca gca ttg agc gcc 912
 Asn Lys Pro Tyr Arg Cys Cys Asn Trp Lys Cys Thr Ala Leu Ser Ala
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act gca atc aca gtg act ttg gcc ttg tta cta gcc tat gtg att gca 960
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His Glu Met Asp Leu Ala Tyr Thr Ser Ser Ser Asp Glu Ser Glu Asp
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Gly Arg Lys Pro Arg Gln Ser Tyr Asn Ser Arg Glu Thr Leu His Glu
 35 40 45

Tyr Asn Gln Glu Leu Arg Met Asn Tyr Asn Ser Gln Ser Arg Lys Arg
 50 55 60

35

Lys Glu Val Glu Lys Ser Thr Gln Glu Met Glu Phe Cys Glu Thr Ser
 65 70 75 80

40

His Thr Leu Cys Ser Gly Tyr Gln Thr Asp Met His Ser Val Ser Arg
 85 90 95

His Gly Tyr Gln Leu Glu Met Gly Ser Asp Val Asp Thr Glu Thr Glu
 100 105 110

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Gly Ala Ala Ser Pro Asp His Ala Leu Arg Met Trp Ile Arg Gly Met
 115 120 125

Lys Ser Glu His Ser Ser Cys Leu Ser Ser Arg Ala Asn Ser Ala Leu
130 135 140

5 Ser Leu Thr Asp Thr Asp His Glu Arg Lys Ser Asp Gly Glu Asn Asp
145 150 155 160

Val Gln Ser Ser Pro His Asn Gln Phe Thr Phe Arg Pro Leu Pro Pro
165 170 175

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Pro Pro Pro Pro Pro His Ala Cys Thr Cys Ala Arg Lys Pro Pro Pro
180 185 190

15

Ala Ala Asp Ser Leu Gln Arg Arg Ser Met Thr Thr Arg Ser Gln Pro
195 200 205

Ser Pro Ala Ala Pro Ala Pro Pro Thr Ser Thr Gln Asp Ser Val His
210 215 220

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Leu His Asn Ser Trp Val Leu Asn Ser Asn Ile Pro Leu Glu Thr Arg
225 230 235 240

His Phe Leu Phe Lys His Gly Ser Gly Ser Ser Ala Ile Phe Ser Ala
245 250 255

25

Ala Ser Gln Asn Tyr Pro Leu Thr Ser Asn Thr Val Tyr Ser Pro Pro
260 265 270

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Pro Arg Pro Leu Pro Arg Ser Thr Phe Ser Arg Pro Ala Phe Thr Phe
275 280 285

Asn Lys Pro Tyr Arg Cys Cys Asn Trp Lys Cys Thr Ala Leu Ser Ala
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ggc aaa gag tgt cgc tac aca agc tcc tct ctg gac agt gag gac tgc	96
Gly Lys Glu Cys Arg Tyr Thr Ser Ser Ser Leu Asp Ser Glu Asp Cys	
20 25 30	

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cgc gtg ccc aca cag aaa tcc tac agc tcc agt gag act ctg aag gcc	144
Arg Val Pro Thr Gln Lys Ser Tyr Ser Ser Ser Glu Thr Leu Lys Ala	
35 40 45	

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tat gac cat gac agc agg atg cac tat gga aac cga gtc aca gac ctc	192
Tyr Asp His Asp Ser Arg Met His Tyr Gly Asn Arg Val Thr Asp Leu	
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atc cac cgg gag tca gat gag ttt cct aga caa gga acc aac ttc acc	240
Ile His Arg Glu Ser Asp Glu Phe Pro Arg Gln Gly Thr Asn Phe Thr	
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ctt gcc gaa ctg ggc atc tgt gag ccc tcc cca cac cga agc ggc tac	288
Leu Ala Glu Leu Gly Ile Cys Glu Pro Ser Pro His Arg Ser Gly Tyr	
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tgc tcc gac atg ggg atc ctt cac cag ggc tac tcc ctt agc aca ggg	336
Cys Ser Asp Met Gly Ile Leu His Gln Gly Tyr Ser Leu Ser Thr Gly	
100 105 110	

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tct gac gcc gac tcc gac acc gag gga ggg atg tct cca gaa cac gcc	384
Ser Asp Ala Asp Ser Asp Thr Glu Gly Gly Met Ser Pro Glu His Ala	
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130 135 140	

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tcc agt cgt gaa aac tcg gcc ctt acc ctg act gac tct gac aac gaa	480
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	Asn Lys Ser Asp Asp Glu Asn Glu Ser Arg Pro Ile Pro Pro Thr Ser	
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	180 185 190	
10	cca cca gtt agc tgc cag atg cca ttg cta gac agc aac acc tcc cat	624
	Pro Pro Val Ser Cys Glu Met Pro Leu Leu Asp Ser Asn Thr Ser His	
	195 200 205	
15	caa atc atg gac acc aac cct gat gag gaa ttc tcc ccc aat tca tac	672
	Glu Ile Met Asp Thr Asn Pro Asp Glu Glu Phe Ser Pro Asn Ser Tyr	
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	Leu Leu Arg Ala Cys Ser Gly Pro Glu Glu Ala Ser Ser Ser Gly Pro	
	225 230 235 240	
	ccg aac cac cac agc cag tcg act ctg agg ccc cct ctc cca ccc cct	768
	Pro Asn His His Ser Glu Ser Thr Leu Arg Pro Pro Leu Pro Pro Pro	
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	His Asn His Thr Leu Ser His His His Ser Ser Ala Asn Ser Leu Asn	
	260 265 270	
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	Arg Asn Ser Leu Thr Asn Arg Arg Ser Glu Ile His Ala Pro Ala Pro	
	275 280 285	
35	gcg ccc aat gac ctg gcc acc aca cca gag tcc gtt cag ctt cag gac	912
	Ala Pro Asn Asp Leu Ala Thr Thr Pro Glu Ser Val Glu Leu Glu Asp	
	290 295 300	
40	agc tgg gtg cta aac agc aac gtg cca ctg gag acc cgg cac ttc ctc	960
	Ser Trp Val Leu Asn Ser Asn Val Pro Leu Glu Thr Arg His Phe Leu	
	305 310 315 320	
	ttc aag acc tcc tcg ggg agc aca ccc ttg ttc agc agc tct tcc ccg	1008
	Phe Lys Thr Ser Ser Gly Ser Thr Pro Leu Phe Ser Ser Ser Ser Pro	
	325 330 335	
45	gga tac cct ttg acc tca gga acg gtt tac acg ccc ccg ccc cgc ctg	1056
	Gly Tyr Pro Leu Thr Ser Gly Thr Val Tyr Thr Pro Pro Pro Arg Leu	

340

345

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ctg ccc agg aat act ttc tcc agg aag gct ttc aag ctg aag aag ccc 1104
Leu Pro Arg Asn Thr Phe Ser Arg Lys Ala Phe Lys Leu Lys Lys Pro
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tcc aaa tac tgc agc tgg aaa tgt gct gcc ctc tcc gcc att gcc gcg 1152
Ser Lys Tyr Cys Ser Trp Lys Cys Ala Ala Leu Ser Ala Ile Ala Ala
370 375 380

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gcc ctc ctc ttg gct att ttg ctg gcg tat ttc ata gca atg 1194
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Arg Val Pro Thr Gln Lys Ser Tyr Ser Ser Ser Glu Thr Leu Lys Ala
35 40 45

30

Tyr Asp His Asp Ser Arg Met His Tyr Gly Asn Arg Val Thr Asp Leu
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Ile His Arg Glu Ser Asp Glu Phe Pro Arg Gln Gly Thr Asn Phe Thr
65 70 75 80

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Leu Ala Glu Leu Gly Ile Cys Glu Pro Ser Pro His Arg Ser Gly Tyr
85 90 95

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Cys Ser Asp Met Gly Ile Leu His Gln Gly Tyr Ser Leu Ser Thr Gly
100 105 110

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Ser Asp Ala Asp Ser Asp Thr Glu Gly Gly Met Ser Pro Glu His Ala
115 120 125

Ile Arg Leu Trp Gly Arg Gly Ile Lys Ser Arg Arg Ser Ser Gly Leu
 130 135 140

5 Ser Ser Arg Glu Asn Ser Ala Leu Thr Leu Thr Asp Ser Asp Asn Glu
 145 150 155 160

Asn Lys Ser Asp Asp Glu Asn Glu Ser Arg Pro Ile Pro Pro Thr Ser
 165 170 175

10 Ser Pro Ser Leu Leu Pro Ser Ala Gln Leu Pro Ser Ser His Asn Pro
 180 185 190

Pro Pro Val Ser Cys Gln Met Pro Leu Leu Asp Ser Asn Thr Ser His
 15 195 200 205

Gln Ile Met Asp Thr Asn Pro Asp Glu Glu Phe Ser Pro Asn Ser Tyr
 210 215 220

20 Leu Leu Arg Ala Cys Ser Gly Pro Gln Gln Ala Ser Ser Ser Gly Pro
 225 230 235 240

Pro Asn His His Ser Gln Ser Thr Leu Arg Pro Pro Leu Pro Pro Pro
 245 250 255

25 His Asn His Thr Leu Ser His His His Ser Ser Ala Asn Ser Leu Asn
 260 265 270

Arg Asn Ser Leu Thr Asn Arg Arg Ser Gln Ile His Ala Pro Ala Pro
 30 275 280 285

Ala Pro Asn Asp Leu Ala Thr Thr Pro Glu Ser Val Gln Leu Gln Asp
 290 295 300

35 Ser Trp Val Leu Asn Ser Asn Val Pro Leu Glu Thr Arg His Phe Leu
 305 310 315 320

Phe Lys Thr Ser Ser Gly Ser Thr Pro Leu Phe Ser Ser Ser Ser Pro
 325 330 335

40 Gly Tyr Pro Leu Thr Ser Gly Thr Val Tyr Thr Pro Pro Pro Arg Leu
 340 345 350

45 Leu Pro Arg Asn Thr Phe Ser Arg Lys Ala Phe Lys Leu Lys Lys Pro
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 Arg Glu Lys Glu Arg Arg Tyr Thr Asn Ser Ser Ala Asp Asn Glu Glu
 20 25 30

30 tgc cgg gta ccc aca cag aag tcc tac agt tcc agc gag aca ttg aaa 144
 Cys Arg Val Pro Thr Gln Lys Ser Tyr Ser Ser Ser Glu Thr Leu Lys
 35 40 45

35 gct ttt gat cat gat tcc tcg cgg ctg ctt tac ggc aac aga gtg aag 192
 Ala Phe Asp His Asp Ser Ser Arg Leu Leu Tyr Gly Asn Arg Val Lys
 50 55 60

gat ttg gtt cac aga gaa gca gac gag ttc act aga caa gga cag aat 240
 Asp Leu Val His Arg Glu Ala Asp Glu Phe Thr Arg Gln Gly Gln Asn
 65 70 75 80

40 ttt acc cta agg cag tta gga gtt tgt gaa cca gca act cga aga gga 288
 Phe Thr Leu Arg Gln Leu Gly Val Cys Glu Pro Ala Thr Arg Arg Gly
 85 90 95

45 ctg gca ttt tgt gcg gaa atg ggg ctc cct cac aga ggt tac tct atc 336
 Leu Ala Phe Cys Ala Glu Met Gly Leu Pro His Arg Gly Tyr Ser Ile
 100 105 110

	agt gca ggg tca gat gct gat act gaa aat gaa gca gtg atg tcc cca	384
	Ser Ala Gly Ser Asp Ala Asp Thr Glu Asn Glu Ala Val Met Ser Pro	
	115 120 125	
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	gag cat gcc atg aga ctt tgg ggc agg ggg gtc aaa tca ggc cgc agc	432
	Glu His Ala Met Arg Leu Trp Gly Arg Gly Val Lys Ser Gly Arg Ser	
	130 135 140	
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	tcc tgc ctg tca agt cgg tcc aac tca gcc ctc acc ctg aca gat acg	480
	Ser Cys Leu Ser Ser Arg Ser Asn Ser Ala Leu Thr Leu Thr Asp Thr	
	145 150 155 160	
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	gag cac gaa aac aag tcc gac agt gag aat gag caa cct gca agc aat	528
	Glu His Glu Asn Lys Ser Asp Ser Glu Asn Glu Gln Pro Ala Ser Asn	
	165 170 175	
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	caa ggc cag tct acc ctg cag ccc ttg ccg cct tcc cat aag cag cac	576
	Gln Gly Gln Ser Thr Leu Gln Pro Leu Pro Pro Ser His Lys Gln His	
	180 185 190	
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	tct gca cag cat cat cca tcc atc act tct ctc aac aga aac tcc ctg	624
	Ser Ala Gln His His Pro Ser Ile Thr Ser Leu Asn Arg Asn Ser Leu	
	195 200 205	
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	acc aat aga agg aac cag agt ccg gcc ccg ccg gct gct ttg ccc gcc	672
	Thr Asn Arg Arg Asn Gln Ser Pro Ala Pro Pro Ala Ala Leu Pro Ala	
	210 215 220	
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	gag ctg caa acc aca ccc gag tcc gtc cag ctg cag gac agc tgg gtc	720
	Glu Leu Gln Thr Thr Pro Glu Ser Val Gln Leu Gln Asp Ser Trp Val	
	225 230 235 240	
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	ctt ggc agt aat gta cca ctg gaa agc agg cat ttc cta ttc aaa aca	768
	Leu Gly Ser Asn Val Pro Leu Glu Ser Arg His Phe Leu Phe Lys Thr	
	245 250 255	
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	gga aca ggt aca acg cca ctg ttc agt act gca acc cca gga tac aca	816
	Gly Thr Gly Thr Thr Pro Leu Phe Ser Thr Ala Thr Pro Gly Tyr Thr	
	260 265 270	
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	atg gca tct ggc tct gtt tat tca cca cct act cgg cca cta cct aga	864
	Met Ala Ser Gly Ser Val Tyr Ser Pro Pro Thr Arg Pro Leu Pro Arg	
	275 280 285	
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	aac acc cta tca aga agt gct ttt aaa ttc aag aag tct tca aag tac	912

Asn Thr Leu Ser Arg Ser Ala Phe Lys Phe Lys Lys Ser Ser Lys Tyr
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 Cys Ser Trp Lys Cys Thr Ala Leu Cys Ala Val Gly Val Ser Val Leu
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10 ctg gca ata ctc ctg tct tat ttt ata gca atg 993
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 35 40 45

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 50 55 60

Asp Leu Val His Arg Glu Ala Asp Glu Phe Thr Arg Gln Gly Gln Asn
 65 70 75 80

35 Phe Thr Leu Arg Gln Leu Gly Val Cys Glu Pro Ala Thr Arg Arg Gly
 85 90 95

Leu Ala Phe Cys Ala Glu Met Gly Leu Pro His Arg Gly Tyr Ser Ile
 100 105 110

40 Ser Ala Gly Ser Asp Ala Asp Thr Glu Asn Glu Ala Val Met Ser Pro
 115 120 125

45 Glu His Ala Met Arg Leu Trp Gly Arg Gly Val Lys Ser Gly Arg Ser
 130 135 140

Ser Cys Leu Ser Ser Arg Ser Asn Ser Ala Leu Thr Leu Thr Asp Thr
145 150 155 160

5 Glu His Glu Asn Lys Ser Asp Ser Glu Asn Glu Gln Pro Ala Ser Asn
165 170 175

Gln Gly Gln Ser Thr Leu Gln Pro Leu Pro Pro Ser His Lys Gln His
180 185 190

10 Ser Ala Gln His His Pro Ser Ile Thr Ser Leu Asn Arg Asn Ser Leu
195 200 205

Thr Asn Arg Arg Asn Gln Ser Pro Ala Pro Pro Ala Ala Leu Pro Ala
210 215 220

15 Glu Leu Gln Thr Thr Pro Glu Ser Val Gln Leu Gln Asp Ser Trp Val
225 230 235 240

20 Leu Gly Ser Asn Val Pro Leu Glu Ser Arg His Phe Leu Phe Lys Thr
245 250 255

Gly Thr Gly Thr Thr Pro Leu Phe Ser Thr Ala Thr Pro Gly Tyr Thr
260 265 270

25 Met Ala Ser Gly Ser Val Tyr Ser Pro Pro Thr Arg Pro Leu Pro Arg
275 280 285

Asn Thr Leu Ser Arg Ser Ala Phe Lys Phe Lys Lys Ser Ser Lys Tyr
290 295 300

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15	aaa gcc ccg cag aaa tcg tac agc tcc agc gag acc ctg aag gcc tac	144
	Lys Ala Pro Gln Lys Ser Tyr Ser Ser Ser Glu Thr Leu Lys Ala Tyr	
	35 40 45	
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	Asp Gln Asp Ala Arg Leu Ala Tyr Gly Ser Arg Val Lys Asp Ile Val	
	50 55 60	
25	ccg cag gag gcc gag gaa ttc tgc cgc aca ggt gcc aac ttc acc ctg	240
	Pro Gln Glu Ala Glu Glu Phe Cys Arg Thr Gly Ala Asn Phe Thr Leu	
	65 70 75 80	
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	Arg Glu Leu Gly Leu Glu Glu Val Thr Pro Pro His Gly Thr Leu Tyr	
	85 90 95	
35	cgg aca gac att ggc ctc ccc cac tgc ggc tac tcc atg ggg gct ggc	336
	Arg Thr Asp Ile Gly Leu Pro His Cys Gly Tyr Ser Met Gly Ala Gly	
	100 105 110	
40	tct gat gcc gac atg gag gct gac acg gtg ctg tcc cct gag cac ccc	384
	Ser Asp Ala Asp Met Glu Ala Asp Thr Val Leu Ser Pro Glu His Pro	
	115 120 125	
45	gtg cgt ctg tgg ggc cgg agc aca cgg tca ggg cgc agc tcc tgc ctg	432
	Val Arg Leu Trp Gly Arg Ser Thr Arg Ser Gly Arg Ser Ser Cys Leu	
	130 135 140	
50	tcc agc cgg gcc aat tcc aat ctc aca ctc acc gac acc gag cat gaa	480
	Ser Ser Arg Ala Asn Ser Asn Leu Thr Leu Thr Asp Thr Glu His Glu	
	145 150 155 160	
55	aac act gag act gat cat ccg ggc ggc ctg cag aac cac gcg cgg ctc	528
	Asn Thr Glu Thr Asp His Pro Gly Gly Leu Gln Asn His Ala Arg Leu	
	165 170 175	

	cgg acg ccg ccg ccg ccg ctc tcg cac gcc cac acc ccc aac cag cac	576
	Arg Thr Pro Pro Pro Pro Leu Ser His Ala His Thr Pro Asn Gln His	
	180 185 190	
5	cac gcg gcc tcc att aac tcc ctg aac cgg ggc aac ttc acg ccg agg	624
	His Ala Ala Ser Ile Asn Ser Leu Asn Arg Gly Asn Phe Thr Pro Arg	
	195 200 205	
10	agc aac ccc agc ccg gcc ccc acg gac cac tcg ctc tcc gga gag ccc	672
	Ser Asn Pro Ser Pro Ala Pro Thr Asp His Ser Leu Ser Gly Glu Pro	
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15	cct gcc ggc ggc gcc cag gag cct gcc cac gcc cag gag aac tgg ctg	720
	Pro Ala Gly Gly Ala Gln Glu Pro Ala His Ala Gln Glu Asn Trp Leu	
	225 230 235 240	
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	Phe Leu Gly Thr Leu Gln Asp Asn Leu Ile Glu Met Asp Ile Leu Gly	
	260 265 270	
30	gcc tcc cgc cat gat ggg gct tac agt gac ggg cac ttc ctc ttc aag	864
	Ala Ser Arg His Asp Gly Ala Tyr Ser Asp Gly His Phe Leu Phe Lys	
	275 280 285	
35	cct gga ggc acc tcc ccg ctc ttc tgc acc aca tca cca ggg tac cca	912
	Pro Gly Gly Thr Ser Pro Leu Phe Cys Thr Thr Ser Pro Gly Tyr Pro	
	290 295 300	
40	ctg acg tcc agc aca gtg tac tct cct ccg ccc cga ccc ctg ccc cgc	960
	Leu Thr Ser Ser Thr Val Tyr Ser Pro Pro Pro Arg Pro Leu Pro Arg	
	305 310 315 320	
45	agc acc ttc gcc cgg ccg gcc ttt aac ctc aag aag ccc tcc aag tac	1008
	Ser Thr Phe Ala Arg Pro Ala Phe Asn Leu Lys Lys Pro Ser Lys Tyr	
	325 330 335	
50	tgt aac tgg aag tgc gca gcc ctg agc gcc atc gtc atc tca gcc act	1056
	Cys Asn Trp Lys Cys Ala Ala Leu Ser Ala Ile Val Ile Ser Ala Thr	
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Lys Ala Pro Gln Lys Ser Tyr Ser Ser Ser Glu Thr Leu Lys Ala Tyr
35 40 45

20 Asp Gln Asp Ala Arg Leu Ala Tyr Gly Ser Arg Val Lys Asp Ile Val
50 55 60

25 Pro Gln Glu Ala Glu Glu Phe Cys Arg Thr Gly Ala Asn Phe Thr Leu
65 70 75 80

Arg Glu Leu Gly Leu Glu Glu Val Thr Pro Pro His Gly Thr Leu Tyr
85 90 95

30 Arg Thr Asp Ile Gly Leu Pro His Cys Gly Tyr Ser Met Gly Ala Gly
100 105 110

Ser Asp Ala Asp Met Glu Ala Asp Thr Val Leu Ser Pro Glu His Pro
115 120 125

35 Val Arg Leu Trp Gly Arg Ser Thr Arg Ser Gly Arg Ser Ser Cys Leu
130 135 140

40 Ser Ser Arg Ala Asn Ser Asn Leu Thr Leu Thr Asp Thr Glu His Glu
145 150 155 160

Asn Thr Glu Thr Asp His Pro Gly Gly Leu Gln Asn His Ala Arg Leu
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45 Arg Thr Pro Pro Pro Pro Leu Ser His Ala His Thr Pro Asn Gln His

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Arg Lys Ser Glu
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